Project Overview

Students will design and build a boat out of clay, tin foil, and craft sticks. Answering the question: What boat design holds the most cargo? They will work through the design process as they complete these tasks. They will also complete design and redesign T chart sheets as they go. Students will also create a summary activity to share their solution on the boat design and the design process.

Possible Pacing

Day 1 – Introduction of driving question and task (without details) Whole class lesson over chapter 11 lesson 1 focus on density, mass, weight, volume, buoyancy

Day 2 Bill Nye You Tube video(30 minutes) (find on link page)– Especially the first half of this video shows really good experiments that explain the concept of displacement and buoyancy. It should provide an opportunity for further discussion of concepts from lesson 1

Day 3 Introduce the design process using the poster (find on link page)

Show Design Squad PVC Kayak episode. Following video allow students to discuss how the students in the video used the design process and teamwork.

Day 4 Project details/ show materials – Time for group Brainstorming. Groups should be discussing which design to begin with.

Day 5 Choose initial design and complete design worksheet/ If time begin building

Day 6 Design/ build

Day 7 Lesson on finding the density of a boat. Mass on scale. Find volume through displacement and capacity. Calculate boat density ( mass / volume) One ml = one cubic centimeter

Day 8 Test/ evaluate, redesign, build (Complete redesign worksheet)

Day 9 Test/ evaluate, redesign, build (Complete redesign worksheet)

Day 10 Test/ evaluate, redesign, build (Complete redesign worksheet)

Day 11 Students create summary presentation/ video/ photo story to share solutions. (If you are doing a photo story or video, you may want students to take picture/ video as they go through the process.) Also, see the rubric and presentation questions for the summary presentation.

Day 12 Students create summary presentation/ video/ photo story to share solutions

Day 13 Students create summary presentation/ video/ photo story to share solutions

Day 14 Students create summary presentation/ video/ photo story to share solutions

Day 15 Share presentations and test boats. Student groups will share presentation and then have their boat tested.